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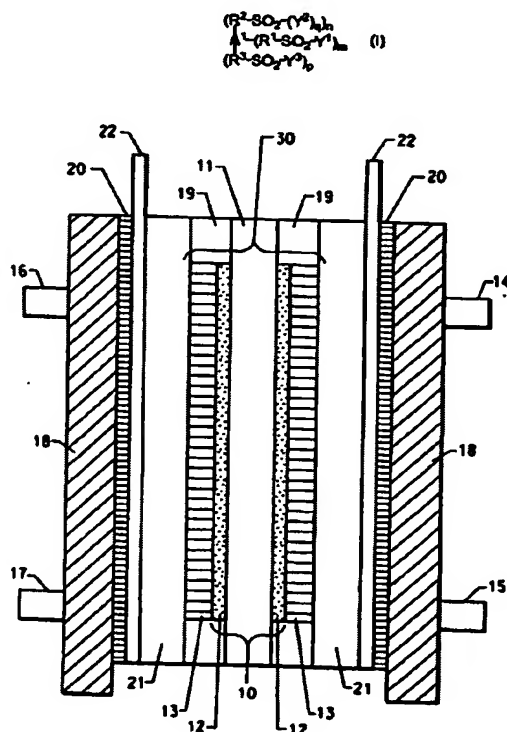
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(54) Title: SULFONIMIDE CONTAINING COMPOUNDS AND THEIR USE IN POLYMER ELECTROLYTE MEMBRANES FOR ELECTROCHEMICAL CELLS



(57) Abstract: A compound having the general structure (I), wherein A_{17} is a monovalent, divalent, or trivalent aromatic heterocyclic group comprising heterocyclic rings; R_{17} , R_{27} , and R_{37} are divalent fluorinated groups; m , n , and p are 0 to 3, with the proviso that $m + n + p$ is equal to 1, 2, or 3 so that the carbon atoms of the heterocyclic rings are fully substituted by acidic fluorinated sulfonyl-containing groups; q is 0 or 1; Y_{17} is $-OH$, $-NH-SO_2\#191-R_{47}$ wherein R_{47} is a monovalent fluorinated group, $-NH-$, $-NH-SO_2\#191-R_{57}-SO_2\#191-NH-$, or $-NH-SO_2\#191-R_{67}-A_{27}-R_{77}-SO_2\#191-NH-$, wherein A_{27} is a divalent heterocyclic group and R_{57} , R_{67} , and R_{77} are divalent fluorinated groups; and Y_{27} and Y_{37} are $-OH$ or $-NH-SO_2\#191-R_{47}$; with the proviso that when m and n are each equal to 1, p is 0 to 1, and q is 0, Y_{17} is selected from the group consisting of $-NH-$, $-NH-SO_2\#191-R_{57}-SO_2\#191-NH-$, and $-NH-SO_2\#191-R_{67}-A_{27}-R_{77}-SO_2\#191-NH-$. By compound is meant either a small molecule or a repeat unit of a polymer. The invention also provides a solid polymer electrolyte membrane, a membrane electrode assembly, a gas diffusion electrode, an electrocatalyst coating composition, and a fuel cell.